IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

GENERAL ACCESS SOLUTIONS, LTD.,

Plaintiff,

v.

SPRINT SPECTRUM L.P., SPRINTCOM, INC. and ASSURANCE WIRELESS USA, L.P.,

Defendants.

Case No. 2:20-cv-00007

JURY TRIAL DEMANDED

PLAINTIFF'S OPENING CLAIM CONSTRUCTION BRIEF

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Ex. H	U.S. Patent No. 7,366,133 ("Ahy")
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Ex. T	PTAB IPR Final Written Decision
Ex. U	Sprint IPR Reply Brief

Exhibit	Description
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Ex. W	General Access Fed. Cir. Resp. Br.
Ex. X	Patent Owner IPR Response
Ex. Y	July 28, 2020 Email from Sprint

INTRODUCTION

Wireless access technologies have transformed the world over the last twenty years. Cellphones, laptops, tablets and numerous other devices have revolutionized how people access data. As the use of such devices has expanded, wireless providers have been challenged to provide increased data transmission rates to an ever-increasing number of subscribers.

Raze Technologies, the predecessor to Plaintiff General Access and the original assignee of the asserted '931 patent, was at the forefront of this technological revolution. Using an approach first developed by Raze's Chief Technology Officer Paul Struhsaker, Sprint's Time Division Duplex ("TDD") network incorporates advanced antenna arrays to create "beamformed" connections between wireless access devices and the base stations that connect those devices to the network.

Mr. Struhsaker invented the '931 patent in connection with his efforts to develop an advanced wireless access system at Raze. Applying his background in signal processing at the NSA and his familiarity with advanced, phased-array radar systems, Mr. Struhsaker recognized that acquisition and synchronization would be key challenges to implementing beamforming and TDD in a wireless communication system. His solution involved having the base station periodically transmit a "broadcast" signal to disseminate information necessary for wireless devices to acquire the correct beamformed signal and to synchronize communications between the base station and the wireless devices. After such information was propagated by the broadcast beam, the base station and wireless access devices would transmit data to one another using beamformed signals.

For each of the claim terms proposed for construction, General Access offers the plain and ordinary meaning based on the claims, the specification, and the prosecution history. In contrast, Sprint attempts to manufacture non-infringement defenses by urging the Court to adopt unduly narrow constructions of the relevant terms.

FACTUAL BACKGROUND

The '931 patent discloses a system and method for beamforming in a wireless network. Beamforming is typically performed with an advanced directional antenna containing multiple antenna elements or an array of antennas. By controlling the timing of the signals transmitted by the antenna elements, beams can be directed in specific directions with great precision. As the patent explains, "[a] beam-forming network is a series of antenna elements combined with a delay-weight network . . . . This enhances gain in a given direction or steers a null in a specific direction." Ex. A, '931 patent, 26:10-14. Figure 9 from the specification provides an example beamforming network:

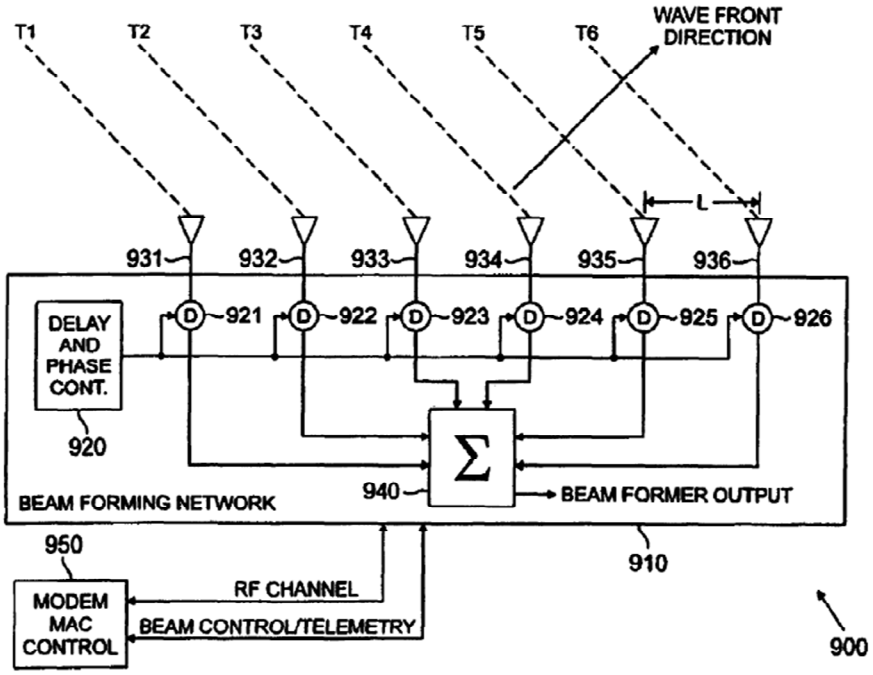

FIG. 9

In Figure 9, the beamforming network includes 6 antenna elements (931-36). *Id.* at 26:33-35. Each antenna element is spaced at distance "L" from the adjacent antenna element. Immediately below each antenna element is a delay ("D") element (921-26), connected to a "Delay and Phase Controller" (920). *Id.* at 26:35-37. Each antenna element can thus be programmed to transmit or receive radio waves at a given delay:

> As FIG. 9 illustrates, the delay of the signal wave at each element for a given angle of signal arrival is given by:
>
> $t=L/c$
>
> where c is the speed of light. The distance, L, between wave fronts to each element is based on the angle of arrival of the signal relative the antenna elements. As an example, if the delay, D, for the antenna elements are all set to be equal, then the antenna has maximum gain at 0 degrees.

Id. at 26:42-52. The direction from which signals are transmitted can be controlled by changing the time at which each of the antenna elements transmits the desired direction of a signal. The ways in which an antenna array can control the direction of the signal is further illustrated in General Access's technical tutorial submitted with this brief.

Beamformed signals transmitted on a beam forming network are referred to in the '931 patent as "directed scanning beam signals." *See, e.g.*, Ex. A at 9:23-28. An example of a simple implementation of directed scanning beams in a cellular network is depicted in Figure 12A. The specification explains that the "[b]eam scanning pattern 1210 covers an [sic] cell sector that is approximately 90 degrees wide." *Id.* at 28:5-7. Each of the nine beams in the above sector thus covers an area "approximately 10 degrees wide." *Id.* at 28:7-9.

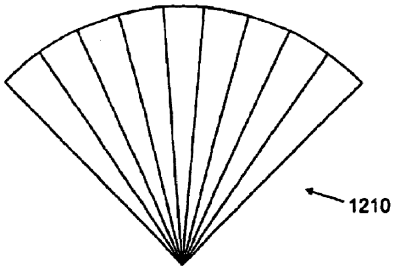

FIG. 12A

The wireless access network described in the '931 patent is also capable of transmitting signals to a wider area simultaneously. The beams used to transmit signals to a wider area are referred to in the patent as "broadcast beams." An example of a broadcast beam is depicted in Fig. 13. Unlike the nine "directed scanning beams" depicted in Figure 12, which cover only ten degrees

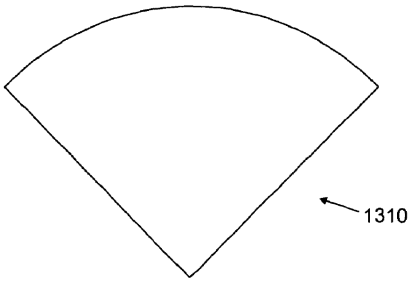

FIG. 13A

each, the broadcast beam 1310 "covers all of the 90 degree cell sector in FIG. 12A." *Id.* at 28:39-40.

The claims of the '931 patent are directed to a wireless network that utilizes both broadcast beams and directed scanning beams. As the Federal Circuit explained, "the '931 patent discloses sending a broadcast signal to all subscribers within a service area at the start of each frame, followed by a series of directed signals or 'beams' sent to and received from selected subscribers over the remainder of each frame." *Sprint Spectrum L.P. v. Gen. Access Sols., Ltd.*, -- Fed App'x --, No. 2019-1855, 2020 WL 2465414, at *1 (Fed. Cir. May 13, 2020). The broadcast beam at the start of a frame facilitates the synchronization of wireless devices on the network and can provide other information needed by the wireless device to communicate on the network. Ex. A, '931 Patent at 28:44-51. Then, by transmitting subsequent data on a directed scanning beam, the transceiver can take advantage of the many benefits of beamforming. *See id.* at 25:29-39. In addition, "[t]hrough this approach, the downlink and uplink bandwidth of each frame can be dynamically allocated to various subscribers in a nonuniform fashion, thereby improving performance as compared to other ways of allocating bandwidth." *Sprint Spectrum L.P.*, 2020 WL 2465414, at *1.

The claims of the '931 patent are directed to beamforming within a "TDD frame." As the specification explains, "[t]o provide a subscriber with bi-directional (two-way) communication . . . some type of duplexing must be implemented. Duplexing techniques include frequency division duplexing (FDD) and time division duplexing (TDD)." Ex. A, '931 Patent at 5:59-64. "In TDD, a single channel is used for transmission and reception and specific periods of time (i.e., slots) are allocated for transmission and other specific periods of time are allocated for reception." *Id.* at 6:2-5. Wireless networks utilizing TDD transmit and receive signals on the same frequency. Interference between those signals is avoided by allocating specific time slots for transmission and for reception. These are often referred to as "downlink" and "uplink" time slots.

LEGAL STANDARDS

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). When construing the claims in a patent, courts "generally give[]" the "words of a claim" their "ordinary and customary meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips*, 415 F.3d at 1312-13 (citations omitted). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. In other instances, the Court must examine "those sources available to the public that show what a person of skill in the art would have understood [the] disputed claim language to mean." *Id.* (citation omitted).

"[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). "[T]he scope of an invention may only be properly limited to the preferred embodiment 'if the patentee uses words that manifest a clear intention to restrict the scope of the claims to that embodiment.'" *Sprint Spectrum*, 2020 WL 2465414, at *4 (quoting *Info-Hold, Inc. v. Applied Media Techs. Corp.*, 783 F.3d 1262, 1267 (Fed. Cir. 2015)).

The "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term." *Phillips*, 415 F.3d at 1314. "[C]laim terms are normally used consistently throughout the patent." *Id.* In addition, "[d]ifferences among claims can also be a useful guide." *Id.*

The Court can also "consider the patent's prosecution history," *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996), which "consists of the complete record of the proceedings before the PTO," *Phillips*, 415 F.3d at 1317. The prosecution history "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention." *Id.* The prosecution history will also reveal "whether the inventor limited the invention in the course of prosecution." *Id.*

It is also appropriate for the Court to "consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period." *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). "[D]ictionaries, and especially technical dictionaries," can be particularly helpful as they "endeavor to collect the accepted meanings of terms used in various fields of science and technology." *Phillips*, 415 F.3d at 1318.

ARGUMENT

I. The Claims Are Not Limited to Fixed Wireless Access Devices

Sprint asks the Court to limit the asserted claims to networks using "wireless access devices that are fixed at subscriber premises." Sprint fails to identify a single place where the specification or prosecution history limits the invention to networks utilizing fixed wireless access devices. The specification never uses the word "fixed" to describe or modify the "wireless access devices" term that Sprint seeks to limit.

Although the patent does not discuss fixed wireless access ***devices***, the specification and some of the claims refer to fixed wireless access ***networks***. The '931 patent includes three independent claims: Claims 1, 10, and 19. Claim 10 is expressly limited to "[a] fixed wireless access network." But those words do not appear in the other independent claims of the '931 patent, specifically Claims 1 and 19. This unmistakable contrast demonstrates that Claims 1 and 19 do not share the "fixed wireless network" limitation.

Sprint advances two arguments in support of its effort to limit the '931 patent claims to fixed wireless devices. First, Sprint asserts that the preambles of Claims 1 and 19 are limiting, and that the following phrase in the preambles limits the claims to fixed wireless access devices: "wireless access devices disposed at a plurality of subscriber premises." Second, Sprint asserts that the term "wireless access device," on its own, means a fixed wireless access device. Sprint is wrong on both counts.

A. The Preambles of Claims 1 and 19 Are Not Limiting

"Generally, the preamble does not limit the claims." *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). A "preamble may be construed as limiting if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim." *Am. Med. Sys., Inc. v. Biolitec, Inc.*, 618 F.3d 1354, 1358 (Fed. Cir. 2010) (internal citation and quotations omitted). But "'[a] preamble is not regarded as limiting . . . when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention.'" *TomTom, Inc. v. Adolph*, 790 F.3d 1315, 1324 (Fed. Cir. 2015) (quoting *Am. Med. Sys.*, 618 F.3d at 1358-59).

The preambles to Claims 1 and 19 begin with the same introductory language:

> For use in a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network . . .

Sprint argues that "wireless access devices disposed at a plurality of subscriber premises" is limiting and means "wireless access devices that are fixed at subscriber premises."

The relevant phrase is not limiting because it is not "'necessary to give life, meaning, and vitality' to the claim." *Am. Med. Sys.*, 618 F.3d at 1358. Claims 1 and 19 do not refer back to the "wireless access devices" or "subscriber premises" mentioned in the preamble. In fact, the term "subscriber premises" appears only in the preambles of Claims 1 and 19. While the bodies of Claims 1 and 19 discuss "wireless access devices," they do not refer to "said" wireless access devices or

otherwise indicate that those devices must be as described in the preambles. Rather than providing limitations necessary to give meaning to the claims, the relevant portions of the preambles merely state "a purpose or intended use." *TomTom, Inc.*, 790 F.3d at 1324. Indeed, the relevant phrases could be excised from the preambles without impacting "the structure or steps of the claimed invention." *Id.*[1] Preambles like these are not limiting. *See id.*

Sprint has not identified any other portion of the preamble that it believes to be limiting. But even if some other portions of the preamble were found to be limiting, the relevant phrases are not limiting for the reasons explained above. In *TomTom*, the asserted patent included the following preamble: "A method for generating and updating data for use in a destination tracking system of at least one mobile unit comprising." The district court held that the entire preamble was limiting because a portion of the preamble "provide[d] an antecedent basis" for words used in the body of the claims. 790 F.3d at 1322-23. On appeal, the Federal Circuit agreed with the district court that a portion of the preamble provided an antecedent basis for language in the body of the claims and was therefore limiting. But the court went on to hold that the remainder of the preamble—which merely stated "a purpose or intended use" of the invention and did "not recite essential structure or steps"—was not limiting. *Id.* at 1323-24. *See also Koninklijke KPN N.V. v. Samsung Elecs. Co.*, No. 2:14-CV-1165-JRG, 2016 WL 2610649, at *14 (E.D. Tex. May 6, 2016) (holding that only certain portions of the preamble were limiting).

Sprint is unable to identify anything in the specification suggesting that the phrase "wireless access devices disposed at a plurality of subscriber premises" in the preamble is limiting. Sprint instead points to portions of the specification that generally discuss fixed wireless networks. *See, e.g.*,

[1] After excising the disputed phrase, the preambles would read as follows: Claim 1: "For use in a wireless access network comprising a plurality of base stations, … a transceiver …" Claim 19: "For use in a wireless access network comprising a plurality of base stations, … a method of communicating…"

Dkt. 73, Ex. A at 1. But the specification also states that "[t]hose skilled in the art will understand that the principles of the present invention may be implemented in ***any*** suitably arranged wireless access system." Ex. A, '931 Patent at 11:51-54 (emphasis added). Sprint also fails to identify anything in the prosecution history suggesting that the relevant language of the preamble was necessary to overcome the prior art. In this context, the specification's discussion of fixed wireless network embodiments cannot transform an otherwise non-limiting preamble into a claim limitation. *See Am. Med. Sys.*, 618 F.3d at 1359 (preamble was non-limiting where the language was not necessary to overcome a prior art rejection, did not provide a necessary antecedent basis for words in the body of the claim, and did "not embody an essential component of the invention").

B. Wireless Access Devices "Disposed" At Subscriber Premises Do Not Need to be "Fixed"

Claim Term (Claims 1, 10, and 19): "wireless access devices disposed at a plurality of subscriber premises"	
General Access's Construction: No construction necessary; the words should be given their plain and ordinary meaning. To the extent the Court determines that a construction is necessary, General Access proposes the following: "wireless access devices at multiple subscriber locations"	**Sprint's Construction**: "wireless access devices[s] that [are/is] fixed at subscriber premises"

If the Court concludes that the relevant portion of the preamble is limiting, it will also need to determine whether devices "disposed" at subscriber premises must be "fixed" at those locations. Sprint asks the Court to swap-out those words, arguing that "wireless access devices ***disposed*** at a plurality of subscriber premises" means "wireless access devices that are ***fixed*** at subscriber premises."

1. Sprint's Construction Is Contrary to the '931 Patent's Plain Meaning

Sprint's attempt to replace "disposed" with "fixed" is unsupported by the plain meaning of the words. Webster's New International Dictionary defines "disposed" as "Distributed; regulated; arranged; assigned." Webster's New World Dictionary defines "dispose" as "to place in a certain

order or arrangement." Sprint has not identified a single source defining "disposed" to require that the device be "fixed" at a particular location.

Neither the specification nor file history of the '931 patent support Sprint's efforts to narrow the definition of "disposed." The word disposed shows up only twice in the specification. In both cases, the word appears in exactly the same context as it appears in the preambles of claims 1, 10, and 19: "base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises." Ex. A, '931 Patent at Abstract; 9:19-22. Nothing about the way the patent uses the word "disposed" suggests that it should be limited to "fixed."

To the contrary, the specification suggests that "disposed" is not as limited as Sprint suggests. The specification notes that one of the benefits of the invention is to maximize "spectral efficiency between the base stations of the fixed wireless access network and the subscriber access devices ***located at*** the subscriber premises." *Id.* at 9:2-4 (emphasis added). Being located at the subscriber premises is not the same as being fixed thereto. In the context of the '931 patent, wireless access devices can be "disposed" (i.e., located) at subscriber premises without being fixed.

2. The File History Supports a Broader Definition of "Disposed"

The prosecution history undermines Sprint's efforts to limit "disposed" to "fixed." During prosecution of the application leading to the '931 patent, the examiner initially rejected then-pending Claims 1 and 10 as anticipated by U.S. Patent No. 6,094,421 ("Scott"). The examiner found that Scott included "wireless access devices (figure 3a element 302) disposed at a plurality of subscriber premises in an associated cell site (figure 3a, cells associated with user stations 302)." Ex. B, Jan. 10, 2006 Non-Final Rejection at 2-3. Critically, the "user stations" that the examiner found to meet this requirement were not fixed; they were mobile devices located in automobiles:

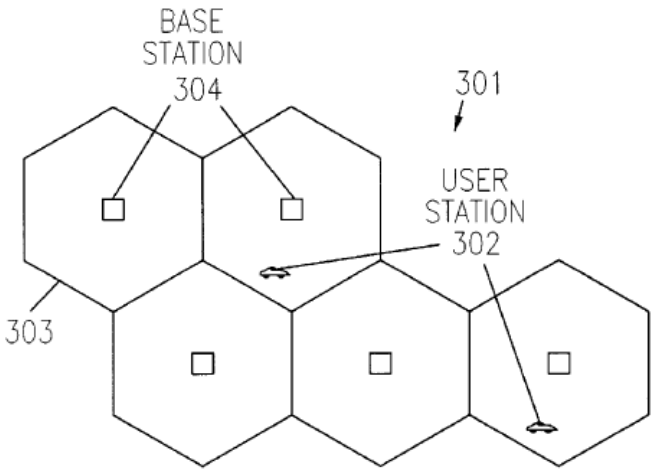

FIG. 3A

Ex. C, Scott at Fig. 3A. *See also id.* at 7:53-55 (discussing "the mobility of user stations 302").

Clearly, the examiner did not believe that "wireless access devices disposed at a plurality of subscriber premises" needed to be fixed at the subscribers' locations. Just as importantly, Raze's response to the rejection made no attempt to distinguish Scott on the basis that it depicted a mobile network, as opposed to a fixed wireless network.[2] Instead, Raze focused on the '931 patent's description of "using a directional antenna to transmit download traffic to substantially only devices within one cell sector." Ex. D, May 18, 2006 Amendment and Response to Office Action at 12-13. In a rejection that followed, the examiner clarified his view of the pending application, concluding that it was anticipated by Scott in part because "Scott teaches (column 2 lines 19-27) user stations are often mobile…" Ex. E, June 7, 2006 Final Rejection at 9. Again, Raze did not take issue with the examiner's view that the '931 patent covered mobile wireless devices. *See* Ex. F, Oct. 13, 2006 Pre-Appeal Brief Request for Review at 1-2. To the contrary, Raze had already stated in the specification that there is no meaningful difference between the architecture of the fixed wireless embodiment in the specification and the architecture of a mobile cellular network. *See* Ex. A, '931 Patent at 5:23-25

[2] As used here, "Raze" includes its successors-in-interest to the '931 patent.

("Fixed wireless broadband systems use a group of transceiver base stations to cover a region ***in the same manner*** as the base stations of a cellular phone system.") (emphasis added).

Sprint also took a broader view of the '931 patent when it sought to invalidate it in an IPR. In its IPR Petition, Sprint asserted that the "Vornefeld" reference disclosed "wireless access devices disposed at a plurality of subscriber premises" because Vornefeld "describe[d] a cellular ***mobile*** communications system' with base stations . . . that can be electronically directed to the ***mobile terminal*** (MT) locations." Ex. G, IPR Petition at 20 (emphasis added; internal citations and quotations omitted). Sprint's IPR Petition admitted of no salient differences between fixed and mobile wireless networks.

3. Sprint's Position Is Contrary to Express Statements in the Specification Making Clear that the Invention Is Not Limited to Fixed Wireless Implementations

Unable to cite any intrinsic or extrinsic evidence supporting its position that "disposed" means "fixed," Sprint instead identifies areas where the specification generally discusses fixed wireless access networks. *See* Dkt. 73 at Ex. A, p. 1. For example, Sprint points to language in which the specification explains the benefits of fixed wireless systems and their significance at the time of the invention. *See* Ex. A, '931 Patent at 4:30-45. But the specification makes clear that the invention is not limited to such networks, stating that "the present invention may be implemented in any suitably arranged wireless access system." *Id.* at 11:51-54. The specification also emphasizes the similarities between the fixed wireless embodiments and mobile cellular networks, stating that "[f]ixed wireless broadband systems use a group of transceiver base stations to cover a region ***in the same manner*** as the base stations of a cellular phone system." *Id.* at 5:23-25 (emphasis added). These statements foreclose Sprint's efforts to limit the claims to fixed wireless networks.

Sprint's effort to import the fixed wireless network embodiment into the "wireless access devices" claim term finds no support in the specification. Even when describing a fixed wireless

network, the patent only mentions the fixed position of the ***antennas*** that communicate to the base stations; it never indicates that the ***devices*** subscribers use to access the network must be fixed. To the contrary, the specification suggests that the antennas and the access devices are distinct:

> The base stations of a fixed wireless broadband system transmit forward channel (i.e., downstream) signals in directed beams to fixed location ***antennas*** attached to the residences or offices of subscribers. The base stations also receive reverse channel (i.e., upstream) signals transmitted by the broadband ***access equipment*** of the subscriber.

Id. at 5:25-28 (emphasis added). In the fixed wireless access network described in the specification, it is the antennas, and not the "access equipment," that are fixed. Sprint does not identify anything in the specification stating that wireless access devices must always be fixed.

4. Claim Differentiation Further Undermines Sprint's Construction

The '931 Patent includes a group of claims that are expressly limited to a "fixed wireless access network." Claim 10 describes "[a] fixed wireless access network comprising…" Claims 11-18, which depend either directly or indirectly on Claim 10, all begin with "[t]he fixed wireless access network as set forth in claim claim…" Claims 10 through 18 are thus clearly limited to fixed wireless networks. However, independent Claims 1 and 19 and their respective dependent claims are not limited to fixed wireless networks.

The patentee's deliberate choice to omit the word "fixed" from the elements of Claims 1 and 19 undermines Sprint's attempt to limit those claims to fixed wireless devices. *See, e.g.*, *Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 734–35 (Fed. Cir. 2014) (reversing district court's determination that "program" must be limited to "application programs," in part because the asserted independent claim merely described a software "program" while an unasserted independent claim explicitly described an "application software program"); *Voda v. Cordis Corp.*, 536 F.3d 1311, 1320 (Fed. Cir. 2008) (holding that the claimed catheter portion did not need to be straight because other independent claims explicitly included a straight limitation and the omission of that term from the

relevant claims "strongly implies that [those claims] do not require the contact portion of the catheter to be straight").

5. The Preambles Describe Wireless Access Devices at Multiple Subscriber Locations

The plain meaning of the preambles is not limited to devices fixed at subscriber premises, and no construction is necessary to ensure that the jury will understand the breadth of the term. *See Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015) (no construction necessary where "the plain and ordinary meaning of the disputed claim language is clear"). Indeed, Sprint appears to agree that the words in this phrase do not need to be explained to the jury. Its proposed construction merely seeks to import additional limitations from the specification; it is not aimed at clarifying the meaning of any technical words for the jury's benefit.

To the extent the Court determines that a construction of "wireless access devices disposed at a plurality of subscriber premises" would aid the jury's understanding of this phrase, General Access proposes the following: "wireless access devices at multiple subscriber locations." This construction will simplify the phrase without altering its meaning. As discussed above, the term "disposed" means only that the devices are located at a subscriber's location. Similarly, subscriber "premises" merely refers to the places where the subscribers are located. For example, the "Ahy" reference that Sprint relied upon in the IPR defined "customer ***premises*** equipment" as "a device for performing communication processes and tasks at a customer ***location***." Ex. H, U.S. Patent No. 7,366,133 ("Ahy") at 4:31-40 (emphasis added). *See also In the Matter of Petition for a Declaratory Ruling That GTE Airfone, GTE Railfone, & GTE Mobilnet Are Not Subject to the Tel. Operator Consumer Servs. Improvement Act of 1990*, 8 F.C.C. Rcd. 6171, 1993 WL 757287 at ¶¶ 13, 16 (1993) (*reconsideration denied*, 13 F.C.C.Rcd. 16857, 1998 WL 374954) (FCC decision rejecting the argument that "premises" only "refers to a fixed point and not a mobile site such as an airplane, train, or rental car."). Here too, the term "premises" should be construed to cover any subscriber location, whether stationary or mobile.

Even if the preambles to Claims 1 and 19 are limiting, they would not limit the claim scope to fixed wireless access networks. The preambles refer to base stations "***capable*** of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises . . ." (emphasis added). Sprint's equipment would thus merely need to include this ***capability*** in order to satisfy the language relied upon by Sprint. *See, e.g.*, *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1205 (Fed. Cir. 2010) (affirming verdict of infringement where claim merely required certain capabilities because "software for performing the claimed functions existed in the products when sold—in the same way that an automobile engine for propulsion exists in a car even when the car is turned off"). Any base station capable of communicating with mobile devices would be equally capable of communicating with fixed devices.

C. Wireless Access Devices Need Not be Fixed

Claim Term (Claims 1-2, 6-11, 15-20, and 24-29): "wireless access device[s]"	
General Access's Construction: No construction necessary; the words should be given their plain and ordinary meaning.	**Sprint's Construction**: "wireless access devices[s] that [are/is] fixed at subscriber premises"

Perhaps recognizing that the preambles to Claims 1 and 19 do not limit the claims to fixed wireless networks, Sprint asserts that whenever the claims mention "wireless access devices" they really mean ***fixed*** wireless access devices. Sprint cannot point to anything in the specification or file history that defines "wireless access devices" as fixed wireless devices. *See GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[t]he standards for finding lexicography and disavowal are exacting"). Indeed, the words "fixed wireless access device" appear nowhere in the '931 patent. Nor does Sprint identify a single intrinsic or extrinsic source suggesting that, at the time of the invention, a person of ordinary skill would have understood that wireless access devices must always be fixed. Instead, Sprint's position is based entirely on its attempt to import embodiments

from the specification into the claims. Sprint's blatant attempt to alter the plain meaning of the claims so it can limit the scope of this case should be rejected.

1. The Plain Meaning of "Wireless Access Device" is Not Limited to a Fixed Wireless Access Device

Sprint has not identified a single intrinsic or extrinsic source suggesting that "wireless access devices" were limited to fixed devices at the time of the invention. To the contrary, the evidence on this issue is uniform: wireless access devices were not so limited. Webster's New World Dictionary defines "wireless" as "without wire or wires; specific., operating with electromagnetic waves and not with conducting wires." Ex. I. *See also id* (defining "access" as "a way or means of approaching, getting, using, etc."); Ex. J, Webster's New Int'l Dictionary (defining "wireless" as "Having no wire or wires."); *id.* (defining "device" as "A mechanical or practical contrivance to serve a special purpose."). The plain meaning of "wireless access device" is not limited to fixed devices.

The art cited in the specification further demonstrates that, at the time, people of skill were fully aware of mobile wireless devices. For example, a book chapter that the specification "incorporate[s] by reference . . . as if fully set forth herein," Ex. A, '931 patent at 6:29-31, included a chart listing various mobile "Wireless Communication Systems:"

Table 8.1 Multiple Access Techniques Used in Different Wireless Communication Systems

Cellular System	Multiple Access Technique
Advanced Mobile Phone System (AMPS)	FDMA/FDD
Global System for Mobile (GSM)	TDMA/FDD
U.S. Digital Cellular (USDC)	TDMA/FDD
Japanese Digital Cellular (JDC)	TDMA/FDD
CT2 (Cordless Telephone)	FDMA/TDD
Digital European Cordless Telephone (DECT)	FDMA/TDD
U.S. Narrowband Spread Spectrum (IS-95)	CDMA/FDD

Ex. K, Theodore Rappaport, *Wireless Communications*, at 398 (1996). *See also id.* at 439, 445-49 (the following chapter discussing "networking techniques that accommodate mobile voice and data users who move throughout buildings, cities, or countries" and the evolution of mobile wireless access networks in the 1990s). The specification also cites an IEEE submission highlighting the benefits of advanced antenna arrays in "any wireless access system," and specifically notes their ability to enhance "***mobile*** subscriber reception." Ex. L, Benyamin-Seeyar, *Draft Document for SC-FDE PHY Layer System for Sub 11 GHz BWA* (2001) at 47 (emphasis added). The intrinsic evidence thus undermines Sprint's efforts to limit "wireless access devices" to equipment in fixed locations.

The art Sprint cited in the IPR proceedings also demonstrates that mobile wireless access networks were well-known at the time. In addition to the Scott and Vornefeld references addressed above—which both discuss mobile—the Ahy reference Sprint cited in the IPR notes that "[t]he invention is applicable to . . . wireless mobile communication systems" where the "customer premises equipment move substantially…." Ex. H, Ahy at 16:41-47. Clearly, the wireless devices accessing such a network would not be fixed.

The extrinsic evidence Sprint identifies further demonstrates that, at the time of the invention," "wireless" was not limited to "fixed wireless." For example, the GAO Report that Sprint identifies describes "[t]hree basic types of wireless technologies [that] are expected to be used to provide Internet transport to consumers: satellite systems, fixed wireless networks, and mobile wireless networks." Ex. M, GAO Report at 46 (2000). This report, published right around the time of the invention of the '931 patent, also noted that "[m]any industry representatives and experts suggest that accessing the Internet over mobile wireless systems is likely to become extremely popular." *Id.* at 47. At a time when experts were predicting widespread adoption of mobile wireless systems, an invention like the '931 patent that was directed generally to wireless access devices would have been understood by a skilled artisan to be equally applicable to mobile devices.

The contemporaneous recognition of at least three different types of wireless access networks is also apparent in the International Telecommunications Union ("ITU") reference that Sprint cites. The ITU reference "provides definitions of the terms 'fixed,' 'mobile,' and 'nomadic' wireless access." Ex. N, ITU Vocabulary of Terms for Wireless Access at 1-2. These definition do not limit "wireless access device" to a fixed device. *See also id.* at 1 ("Wireless access devices may be considered from many perspectives, for example: ***Mobility capabilities***…"). The Nuayami reference that Sprint cites similarly identifies three "broadband wireless access" ("BWA") systems: a fixed BWA at Fig. 1.4, a "nomadic or portable BWA" at Fig. 1.5, and a "Mobile Broadband Wireless Access," at Fig. 1.6. Ex. O, Loutfi Nuaymi, *WiMax Technology for Broadband Wireless Access* (2007). While Nuayami makes clear that "wireless" does not necessarily mean "mobile," the article demonstrates that "wireless" is a broad term that encompasses more than just fixed wireless.

Finally, Sprint points to two documents related to the WiMAX 802.16 standards in support of its definition of "wireless access device." *See* Dkt. 73, Ex. A at 3. But even Sprint appears to concede that the '931 patent is not limited to those standards. In addition, the 2001 standard begins with a series of definitions, including the following definition of "wireless access": "End-user radio connection(s) to core networks." *See* Ex. P, IEEE Std 802.16-2001 at 8. Nothing in the IEEE standard suggests that those wireless end-user connections were always fixed.

2. Sprint's Efforts to Limit the Claims to the Fixed Wireless Network Embodiments Is Contrary to Federal Circuit Authority

Sprint's attempt to limit the claims to the fixed wireless network embodiments described in the specification is contrary to the Federal Circuit's repeated admonitions against importing embodiments from the specification into the claims. For example, in *Cont'l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 794 (Fed. Cir. 2019), the patent at issue "'repeatedly distinguished the process covered by the patent from . . .a 'single desmear process,'" and "characterized 'the present invention' as using a repeated desmear process." (quoting the district court's decision). Nonetheless, the Federal Circuit

reversed the district court's conclusion that the claims required a "repeated desmear process." The court explained that "none of the statements relied upon by the district court rises to the level of a clear and unmistakable disclaimer." *Id.* at 797 (internal citation and quotation omitted). Moreover, the patent's disparagements of the "single desmear process" were "not clear and unmistakable limiting statements" because the "[m]ere criticism of a particular embodiment . . . is not sufficient to rise to the level of clear disavowal." *Id.* at 798 (internal citation and quotation omitted).

The '931 patent specification demonstrates that the invention was not limited to fixed wireless network embodiments. Sprint points, for example, to places where the specification uses words like "the present invention" to describe the fixed wireless embodiments described in the specification. *See, e.g.*, Ex. A, '931 Patent at 3:28-31. But the specification also makes clear that this and other embodiments "are by way of illustration only and should not be construed in any way to limit the scope of the invention," and that "[t]hose skilled in the art will understand that the principles of the present invention may be implemented in ***any*** suitably arranged wireless access system." *Id.* at 11:49-54 (emphasis added). The specification thus did not limit "the present invention" to fixed wireless. *See Imaginal Systematic, LLC v. Leggett & Platt, Inc.*, 805 F.3d 1102, 1109-10 (Fed. Cir. 2015) (specification's statement that "the present invention provides a fastener apparatus which does not require the vision guidance system of the '789 patent" did not limit the "without a vision guidance system" claim limitation to the system disclosed in the '789 patent because other language in the specification indicated that the term had a broader meaning). Indeed, the specification actually highlights the similarities between fixed and mobile networks, noting that "[f]ixed wireless broadband systems use a group of transceiver base stations to cover a region in the same manner as the base stations of a cellular phone system." Ex. A, '931 Patent at 5:22-25.

It is also worth noting that the '931 patent does not use the word "fixed" in the title, the abstract, or the summary of the invention. The summary of the invention begins by describing "a

transceiver for use in a wireless access network…." *Id.* at 9:16-18. The word "fixed" is conspicuously absent. Similarly, the abstract describes, generically, a "transceiver for use in a wireless access network." And the '931 patent's title begins with "Wireless Access System," without the word "fixed." In this context, the fact that certain portions of the specification describe "fixed" wireless networks as an aspect of "the present invention" does not import a fixed limitation into claims whose plain words are not so limited. *See Cont'l Circuits*, 915 F.3d at 798 (holding that patent claims were not limited to a repeated desmear process described in the specification as part of "the present invention" in part because the repeated desmear language did "not appear in the summary of the invention at all"); *see also See Voda*, 536 F.3d at 1320-21 (claims not limited to catheters with a "straight" contact portion even though the specification described "the present invention" as including a straight contact portion); *Rambus Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1095 (Fed. Cir. 2003) ("bus" was not limited to "multiplexing bus" even though the specification characterized the "present invention" as including a multiplexing bus). And as discussed above, the '931 patent uses the word "fixed" in only some of the claims, indicating that the "fixed" limitation was intentionally omitted from the other claims.

II. "Directed Scanning Beam Signals" Need Not be Pre-Programmed

<table>
<tr><td colspan="2">Claim Term (Claims 1-3, 5, 10-14, 19-23, and 28-29): "directed scanning beam signal[s]"</td></tr>
<tr><td>General Access's Construction: No construction necessary; the words should be given their plain and ordinary meaning.

To the extent the Court determines that a construction is necessary, General Access proposes the following: "[an] antenna radiation pattern[s] aimed in [a] particular direction[s]"</td><td>Sprint's Construction: "signals transmitted using a beam pattern selected from a pre-programmed set of directed beam patterns"</td></tr>
</table>

The '931 patent describes a "beam forming network capable of transmitting directed scanning beam signals in a sector of a cell site…" Ex. A, '931 Patent at 9:26-29. As further explained in Claims 1 and 10, the "directed scanning beam signals" are "each directed to substantially only

wireless access devices within a different one of a plurality of sectors of a cell site…" Thus, in context, "directed scanning beam signals" are beamformed antenna signals aimed towards a part of a cell site. But Sprint once again seeks to import an additional limitation from the specification, namely, that the directed scanning beam signals must be transmitted on a pre-programmed beam.

A. The Claim Language Does Not Require Pre-Programming

The plain meaning of "directed scanning beam signals" does not require pre-programming. Common examples of scanning beams, such as those used in radar systems to scan for objects on the horizon, do not need to be pre-programmed.[3] Sprint identifies no intrinsic or extrinsic evidence suggesting that the term's plain meaning would be limited to pre-programmed beamforming.

In the context of the claims and specification, directed scanning beam signals are simply beamformed signals directed to a portion of a cell site. The Summary of the Invention describes "a beam forming network capable of transmitting directed scanning beam signals in a sector of a cell site…" Ex. A, '931 Patent at 9:26-28. Nothing in that description suggests that the directed scanning beams must be pre-programmed. Similarly, the claims repeatedly refer to "directed scanning beam signals," but never suggest that those signals must be pre-programmed. *See, e.g.*, Claim 1 ("a beam forming network capable of transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors…"); Claim 19 ("transmitting . . . to substantially only wireless access devices in a first of said sectors using a first directed scanning beam signal").

The specification also expressly discloses the use of adaptive beamforming based on calculations performed by the base stations—the very opposite of the pre-programmed beamforming Sprint attempts to restrict the claims to. The specification describes "[d]igital baseband

[3] The '931 patent inventor's background with advanced radar antennas at the NSA likely informed his choice of the word "scanning" to describe the beams used in the invention.

beamforming" as "the most flexible configuration." *Id.* at 27:45-46. Systems using digital baseband beamforming "provide all antenna data to the receiver circuits to allow for rapid calculation of adaptive cancellation." *Id.* at 27:46-48. These systems do not simply rely upon pre-determined antenna time-delays to form individual beams. Instead, "[d]igital baseband beam-forming systems [] provide all-digital processing of weights and delay values." *Id.* at 27:48-51. By processing the antenna delays in real time, digital beamforming systems can dynamically steer beams to specific sectors or subscribers.

Dictionary definitions of the relevant words also do not support Sprint's pre-programming limitation. Webster's New World Dictionary contains the following definition of "beam": "a shaft or stream of light or other radiation, as of X-rays or nuclear particles." Ex. I. The IEEE dictionary published around the time of the invention defines "beam" as: "(of an antenna) The major lobe of the radiation pattern of an antenna." Ex. Q. The IEEE dictionary also defines "beam steering" as "[c]hanging the direction of the major lobe of a radiation pattern." *Id.* None of these definitions limit the sort of beamforming discussed in the '931 patent to pre-programmed beams.

B. The Intrinsic Record Supports General Access's Construction

The file history supports the view that "directed scanning beam signals" are merely beamformed signals aimed in a particular direction. For example, the examiner concluded that the prior art included the claimed "directed scanning beam signals" without determining that those signals were sent on pre-programmed beams. *See* Ex. E, June 7, 2006 Final Rejection at 2-4; 8-9. In responding to the examiner, Raze did not assert that the examiner had wrongly neglected to address pre-programming. Instead, Raze highlighted how the claims used directed scanning beam signals to transmit information to particular areas:

> Independent Claims 1, 10, and 19 each recite a beam forming network transmitting ***directed scanning beam signals*** each directed substantially only to wireless access devices within a different one of a plurality of sectors, the network transmitting the same start of frame field for a TDD frame to all wireless access devices within more

> than one of the sectors, then subsequently transmitting first downlink data traffic to only wireless access devices within one of said sectors in a downlink portion of the TDD frame.
> ….
> Nothing in the cited portion of *Scott* suggests using directional antennae to transmit a start of frame to all devices within all sectors, but transmit certain download traffic to substantially only devices within one cell sector.

Ex. F, Oct. 13, 2006 Pre-Appeal Brief Request for Review at 1-2. No person of skill reading this file history would conclude that the directed beams must always be pre-programmed.

Moreover, the Scott reference that the examiner relied upon mentioned the exchange of "antenna scan and gain parameters" without suggesting that those parameters must be pre-programmed. *See* Ex. C, Scott at 54:52-61. Indeed, Scott contemplates that the base station will make "minor adjustments to the angle of a directional antenna" without indicating that those adjustments—or the original antenna direction—must be pre-programmed. *Id.* at 22:57-63. *See also id.* at 29:21-24 (discussing how the "base station adjusts its transmission antenna, if necessary, so as to direct it towards the second user station" without mentioning pre-programming).

Given the plain meaning of the words used in the claims, the specification, and the prosecution history, the Court should construe "directed scanning beam signal[s]" as "[an] antenna radiation pattern[s] aimed in [a] particular direction[s]."

C. Sprint's Proposed Construction Is Contradicted by the Testimony of its Own IPR Expert

Sprint seeks to limit the meaning of "directed scanning beam signals" to pre-programmed beams by importing a limitation from the specification. The specification discusses beamforming at length. The vast majority of that discussion is silent on the issue of pre-programming. Sprint relies principally, if not entirely, on the following language in the specification: "The present invention uses pre-programmed sets of directed beam patterns to cover a cell in an angular fashion. This is referred to herein as 'beam scanning.'" *Id.* at 28:1-3.

Sprint apparently believes that the patent's description of "beam scanning" should limit the meaning of "directed scanning beam signals" to pre-programmed sets of beams. But the specification nowhere equates "beam scanning" with the claimed "directed scanning beam signals," and the '931 patent never indicates that a "directed scanning beam signal" must be transmitted on a pre-programmed beam. For example, immediately following the beam scanning definition on which Sprint relies, the specification goes on to address "an exemplary beam scanning pattern" that includes "nine directed scanning beams, each approximately ten degrees wide." *Id.* at 28:4-7 (referring to Figure 12A). Though the specification discusses the nine "directed scanning beams" in the context of a "beam scanning" pattern, the specification nowhere says that "directed scanning beam signals" are always limited to the rudimentary pre-programmed embodiment described in Figure 12A and the related text of the specification.

Sprint's own IPR expert rejected the interpretation of "directed scanning beam signals," that Sprint now advances. Instead, he expressed the opinion that the term means "signals transmitted using a beam pattern directed within a sector." Ex. R, Proctor IPR Declaration, ¶ 56. *See also* Ex. S, Proctor IPR Dep. at 7:15-8:14 ("I think when you read the patent specification . . . . a directed scanning beam signal would be a signal that's transmitted that could cover a portion of a particular sector or perhaps an entire sector.").[4]

When Sprint's IPR expert was asked whether the patent's description of "beam scanning" limited the relevant claim term in exactly the way Sprint now advocates, he responded as follows:

> THE WITNESS: I don't think I would say that. I would say that the broadest reasonable interpretation is the one I proposed and that ***this is an alternative one based on a particular implementation***. This is an embodiment that's describing scanning beam signals and one way of building them with pre-programmed sets of direct beam patterns.

[4] The PTAB ultimately declined to review this term, finding that construction was unnecessary "to resolve the issues" presented in the IPR. Ex. T, Final Written Decision at 15.

Id. at 10:16-22 (emphasis added); *see also id.* at 10:23-11:10 (opining that "one could beam scan in additional ways," including "having non-pre-programmed sets that are steered").

The uncontradicted testimony of Sprint's IPR expert establishes that the plain meaning of "directed scanning beam signals" is not limited to pre-programmed beams, and that a person of ordinary skill would not understand the term to be so limited. Sprint nonetheless seeks to limit the term to pre-programmed beams based on the specification's description of "beam scanning." But courts have repeatedly noted that "[t]o disavow claim scope, the specification must contain 'expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.'" *Cont'l Circuits LLC*, 915 F.3d at 797 (quoting *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1306 (Fed. Cir. 2011)). And, as discussed above, even portions of the specification discussing "the present invention" will not limit claim scope unless it is clear that the patentee so intended. In this case, Sprint is incorrect in asserting that the patent's description of "beam scanning" limits the claimed "directed scanning beam signals" to pre-programmed beams.

III. The IPR Proceedings Did Not Change the Meaning of "TDD Frame"

<table>
<tr><td colspan="2">Claim Term (Claims 28 and 29): "[transmits/transmitting], in said downlink portion of said TDD frame, second downlink data traffic"</td></tr>
<tr><td>General Access's Construction: No construction necessary; the words should be given their plain and ordinary meaning.

To the extent the Court determines that "TDD frame" needs construction, General Access proposes the following: "a set of uplink and/or downlink transmission time slots."</td><td>Sprint's Construction: "[transmits/transmitting] second downlink data traffic in the same time frame and the same spatial domain as the first downlink data traffic"</td></tr>
</table>

Independent Claims 1 and 19 describe a TDD frame that begins with a broadcast beam followed by a "directed scanning beam" that transmits "first downlink data traffic" to wireless access devices within one sector of a cell site. Claims 28 and 29 build upon independent Claims 1 and 19, respectively, by adding—within the same TDD frame—"second downlink data traffic" directed to a different sector of the cell site using a different directed scanning beam.

A. Sprint's Construction Contradicts the Language of Claims 28 and 29

Sprint seeks to limit the "second downlink data traffic" of Claims 28 and 29 to data transmitted "in the same time frame and the same spatial domain as the first downlink data traffic." Sprint's proposed construction makes no sense in the context of the remainder of the claim language. Sprint's construction would require that the second downlink data traffic be transmitted in the same area (i.e., the same "spatial domain") as the first downlink data traffic. But Claim 28 requires that the "second downlink data traffic" be sent "to substantially only wireless access devices within ***an other of said sectors***…" (emphasis added). Similarly, Claim 29 requires that the "second downlink data traffic" be sent to "substantially only wireless access devices ***in a second of said sectors***…" (emphasis added). Thus, the claims require that the second downlink data traffic be transmitted to a ***different*** area (i.e., a different "spatial domain") than the first downlink data traffic. "While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms." *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003). In this case, that context makes clear that Sprint's proposed construction is incorrect.

B. The Intrinsic Record Does Not Support Sprint's Construction

Sprint's proposed construction is not supported by anything in the specification or prosecution history of the '931 patent. To the contrary, like the claims themselves, the specification makes clear that portions of the same TDD frame may be transmitted to multiple sectors, i.e., into different areas. *See, e.g.*, Ex. A, '931 Patent at 15:10-15 (describing an embodiment where downlink slots in a TDD frame are grouped based on "physical beam forming"); 19:43-46 (uplink slots in a TDD frame may also be grouped based on "physical beam forming").

Similarly, the prosecution history makes clear that the "second downlink data traffic" of Claims 28 and 29 need not occur at the same time as the "first downlink data traffic" of Claims 1

and 19. For example, the examiner concluded that Claims 28 and 29 were anticipated by Scott in part because, in Scott, "the base station may transmit to a first user station, await a response, and, ***after*** receiving a response from the first user station, transmit to a second user station…" Ex. E, June 6, 2007 Final Rejection at 6 (emphasis added). The examiner did not share Sprint's view that the second downlink data traffic needed to occupy "the same time frame" as the first downlink data traffic.

Sprint cites statements made during the IPR proceedings to support its proposed construction. *See* Dkt. 73 at Ex. A, p. 5. But Sprint itself professed a diametrically opposed view of the "spatial domain" constraints of a TDD frame at those proceedings. Sprint asserted to the PTAB that Vornefeld "shows ***a single frame*** with multiple channels being transmitted in parallel in the spatial domain." Ex. U, Sprint IPR Reply Br. at 15. Critically, Sprint asserted that these multiple channels within a single frame transmitted "downlink data ***to different sectors*** using different directive scanning beams." *Id.* at 16. Accordingly, Sprint argued "Vornefeld discloses the features of claims 28 and 29." *Id.* At the IPR phase, Sprint thus recognized that Claims 28 and 29 require sending information to two different areas, not to "the same spatial domain." *See also* Ex. T, PTAB Final Decision at 22 ("Petitioner contends Vornefeld discloses that its array antennas are able to simultaneously direct several beams ***to different positions***…") (emphasis added).

The PTAB found that Vornefeld did not disclose sending downlink data to different sectors in the same frame:

> We agree with Patent Owner that Petitioner does not establish Vornefeld discloses using different beams in the same TDD frame (i.e., second downlink data traffic, transmitted "in said downlink portion of said TDD frame") to transmit to devices within a different sector.

Ex. T, PTAB Final Decision at 23. Sprint complained to the Federal Circuit that the "only 'evidence' supporting the Board's position" is the following language from General Access's expert declaration: "The second downlink data identified, however, is in a different, spatially-separated, simultaneous

TDD frame ***but not necessarily in a different sector as required by Claims 28 and 29***." Ex. V, Sprint Fed. Cir. Reply Br. at 21 (emphasis added). Thus, according to Sprint, the PTAB rejected Sprint's validity challenge because the spatial separation depicted in Vornefeld was insufficient to demonstrate that the data was being sent "in a different sector." Nothing in that decision or the evidence on which it was based supports Sprint's current view that the components of a TDD frame must share the same time frame and spatial domain.

General Access's statements to the PTAB and the Federal Circuit are similarly unsupportive of Sprint's current position. General Access explained that Vornefeld disclosed "spatially separated TDD frames" that were shown as "separate TDD frames." Ex. W, General Access Fed. Cir. Resp. Br. at 27. *See also* Ex. X, Patent Owner IPR Response at 26 (noting that Vornefeld did "not discuss or disclose using different or multiple beams in the same TDD frame to transmit to devices in another sector."). General Access never asserted that the various components of a single TDD frame must always share the same time frame and the same spatial domain.

C. The Plain Meaning of "TDD Frame" is not Limited as Sprint Suggests

Sprint's proposed construction is unsupported by any evidence suggesting that the components of a TDD frame must occupy "the same time frame and the same spatial domain." The IEEE dictionary published around the time of the invention included more than ten definitions of "frame," none of which include the limitation Sprint now seeks to impose. *See* Ex. Q. Instead, the IEEE definitions demonstrate that a "frame" can include a variety of data units. *See, e.g. id.* ("A unit of transmission at the data link layer or, sometimes, the physical layer;" "A set of consecutive digit time slots in which the position of each digit time slot can be identified by reference to a framing signal."). *See also* Ex. J, Webster's New Int'l Dictionary (providing numerous definitions of "frame," none of which support Sprint's narrow construction).

The specification supports General Access's simpler construction of "TDD frame." The patent explains that, "[i]n TDD, a single channel is used for transmission and reception and specific periods of time (i.e., slots) are allocated for transmission and other specific periods of time are allocated for reception." Thus, to the extent the Court concludes that a construction of "TDD frame" would aid the jury, the following construction would adhere to the plain meaning of the term as used in the '931 patent: "a set of uplink and/or downlink transmission time slots." The remaining words in the phrase Sprint has proposed for construction are clearly within the knowledge of a lay jury and need no construction.

IV. The Court Should Adopt the PTAB's Construction of "A First Beam Map" and the Federal Circuit's Construction of "Scanning Beam Information"

Claim Term (Claims 2, 11, and 20): "a first beam map"	
General Access's Construction: "scheduling information for one or more beams"	**Sprint's Construction:** Unknown[5]

Claims 2, 11, and 20 build upon independent Claims 1, 10, and 19, respectively, by adding that the broadcast beam signal includes "a first beam map containing scanning beam information usable by said wireless access devices to detect said directed scanning beam signals." At the PTAB, the parties ultimately agreed to construe the term "a first beam map" to mean "scheduling information for one or more beams." *See* Ex. T, PTAB Final Decision at 10. The PTAB adopted that agreed-upon construction. *See id.* at 11. On appeal, neither party asked the Federal Circuit to

[5] In the Joint Claim Construction and Prehearing Statement, Dkt. 73 at 1, the parties agreed on a construction of "a first beam map containing scanning beam information usable by said wireless access devices" that was "[c]onsistent with the Federal Circuit's construction." *Id.* Upon subsequent examination of the IPR record, it is clear that the relevant Federal Circuit construction related only to the "scanning beam information" portion of the identified phrase, and not the "a first beam map" portion of the phrase. General Access identified this discrepancy to Sprint four days before submitting this brief. Sprint indicated that it needed more time to consider the issue, and recommended that General Access "brief the issue as opposed" without proposing any alternative constructions. *See* Ex. Y, July 28, 2020 Email from Sprint.

revisit the PTAB's construction. The Federal Circuit cited that construction with approval in the portion of its decision addressing the construction of "scanning beam information." *See Sprint Spectrum*, 2020 WL 2465414, at *5 (noting the PTAB's construction of "first beam map" and stating that the construction of "scanning beam information" should be consistent with the PTAB's construction of "first beam map"). For these reasons, and for all the reasons discussed in the PTAB's decision, Ex. T at 10-12, General Access requests that the Court construe "a first beam map" as "scheduling information for one or more beams."

Claim Term (Claims 2, 11, and 20): "scanning beam information usable by said wireless access devices to detect said directed scanning beam signals"	
General Access's Construction: "any information that is usable by said wireless access devices to detect said directed scanning beam signals"	**Sprint's Construction**: Unknown

In its review of the PTAB's IPR decision, the Federal Circuit held that the PTAB's construction of "scanning beam information…" as "data indicating which beam is used at which time" was too narrow. *Sprint Spectrum*, 2020 WL 2465414, at *3. The Federal Circuit instead concluded that "the recited 'scanning beam information' must be broad enough to include *any* information that is 'usable by said wireless access devices to detect said directed scanning beam signals.'" *Id.* at *5. For all the reasons articulated in the Federal Circuit's decision, General Access requests that the Court construe "scanning beam information usable by said wireless access devices to detect said directed scanning beam signals" as "any information that is usable by said wireless access devices to detect said directed scanning beam signals."

CONCLUSION

For the foregoing reasons, General Access respectfully requests that the Court adopt its proposed claim constructions and reject Sprint's proposed claim constructions.

Dated: July 29, 2020

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to Federal Rules of Civil Procedure and Local Rule CV-5, I hereby certify that a copy of the foregoing document was filed via the Court's CM/ECF system on July 29, 2020, which will send a notification of such filing to all counsel of record.

/s/ Glen E. Summers
Glen E. Summers